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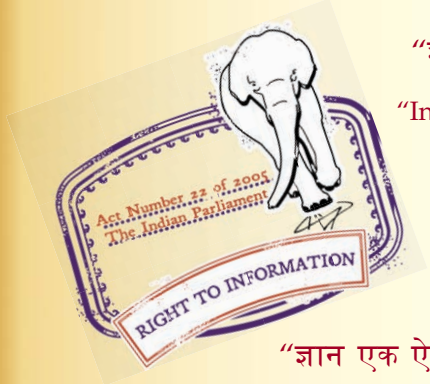

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Indian Standard

SPECIFICATION FOR LINSEED OIL, RAW AND REFINED

(Second Revision)

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AMENDMENT NO. 2 JANUARY 1990
TO
IS : 75 - 1973 SPECIFICATION FOR LINSEED OIL, RAW AND REFINED

(Second Revision)

(*Page* 5, *clause* 4.3) — Substitute the following for the existing clause:

'**4.3 Admixture with Other Oils** — The material shall be free from admixture of other oils.

4.3.1 The material shall be free from non-edible oils, when tested in accordance with 9, 10, 11, 12, 14, 15 and 16 of IS : 548 (Part 2)-1976*.'

(*Page* 5, *clause* 6.2) — Add the following new clause after 6.2:

'**6.2.1** The containers may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.'

*Methods of sampling and test for oils and fats : Part 2 Purity test.

AMENDMENT NO. 3 AUGUST 1995
TO
IS 75 : 1973 SPECIFICATION FOR LINSEED OIL, RAW AND REFINED

(Second Revision)

(*Page* 3, *Foreword, clause* **0.4**) — Add the following clause **0.5** after clause **0.4** and renumber the subsequent clause:

'**0.5** A scheme for labelling environment friendly products to be known as ECO Mark has been introduced at the instance of the Ministry of Environment and Forests (MEF). The ECO Mark shall be administered by the Bureau of Indian Standards (BIS) under the BIS Act, 1986 as per the Resolution No. 71 dated 20 February 1991 as published in the Gazette of the Government of India vide GSR 85(E) dated 21 February 1991. For a product to be eligible for marking with the ECO Mark it shall also carry the Standard Mark of BIS for quality besides meeting additional optional environment friendly (EF) requirements. The EF requirements for linseed oil, raw and refined are therefore being included through an amendment.

This amendment is based on the Gazette Notification No. 678 dated 30 August 1994 for Labelling Edible Oils, Tea and Coffee as environment friendly products, published by the Ministry of Environment and Forests.'

(*Page* 5, *clause* **4.4**) — Add the following clauses after clause **4.4**:

'**4.5 Optional Requirements for ECO Mark**

4.5.1 *General Requirements*

4.5.1.1 The product shall conform to the requirements of quality prescribed under clauses **4.1** to **4.4**.

4.5.1.2 The manufacturers shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the norms laid down under the *Water (Prevention and Control of Pollution) Act*, 1974; *Air (Prevention and Control of Pollution) Act*, 1981; and *Water (Prevention and Control of Pollution) Cess Act*, 1977 respectively, along with the authorization, if required under the *Environment (Protection) Act*, 1986, while applying for ECO Mark.

4.5.2 *Specific Requirements*

4.5.2.1 The product shall not contain aflatoxin, more than 5 mg/kg, when tested by the method prescribed in Appendix A.

4.5.2.2 The pesticide residues, if any, shall not exceed the tolerance limits as prescribed in the *Prevention of Food Adulteration Act,* 1954 and *Rules* made thereunder.

4.5.2.3 Only permitted antioxidants not exceeding the quantities specified against each as prescribed under the *Prevention of Food Adulteration Act,* 1954 and *Rules* made thereunder, shall be used, if required.

4.5.2.4 The product shall not contain any of the toxic metals in excess of the quantities prescribed in Table 2.

TABLE 2 LIMITS FOR TOXIC METALS

Sl. No.	Characteristic	Requirement	Method of Test, Ref to
i)	Lead, mg/kg, *Max*	5.0	15 of IS 1699 : 1995*
ii)	Arsenic, mg/kg, *Max*	0.5	do
iii)	Cadmium, mg/kg, *Max*	1.0	do
iv)	Mercury (total) mg/kg, *Max*	0.25	do

* Methods of sampling and test for food colours (*second revision*).

(*Page* 5, *clause* **5.1**) — Add the following clause **5.1.1** after clause **5.1**:

'**5.1.1** For ECO Mark the product shall be packed in such packages which are made from recyclable (that is which can be re-processed to manufacture any useful product) or biodegradable materials.'

(*Page* 5, *clause* **6.2**) — Add the following clause **6.3** after clause **6.2**:

"**6.3** For ECO Mark the containers shall be marked with the following information:

a) List of identified critical ingredients in descending order of quantity, percent by mass, which shall include 'made from pure linseed oil';

b) The brief criteria for which the product has been labelled for ECO Mark; and

c) Shelf life of the product."

(*Page* 6, *Table* 1) — Add the following Appendix after Table 1:

'APPENDIX A
(*Clause* 4.5.2.1)

DETERMINATION OF AFLATOXIN

A-1 REAGENTS

A-1.1 Acetone, 70 Percent — 700 ml acetone in 300 ml distilled water.

A-1.2 Acetone, 20 Percent — 200 ml acetone in 800 ml distilled water.

A-1.3 Lead Acetate, 20 Percent — 200 g neutral acetate in distilled water and 3 ml glacial acetic acid, diluted to one litre.

A-2 PROCEDURE

A-2.1 Dissolve 30 g sample in 100 ml hexane.

A-2.2 Extract with 3 × 50 ml 70 percent acetone.

A-2.3 To the extract add 60 ml distilled water and 20 ml lead acetate.

A-2.4 Boil to reduce volume to 150 ml. Cool to about 20°C.

A-2.5 Filter and wash with 20 percent acetone.

A-2.6 Extract filtrate and washings with 3 × 50 ml chloroform.

A-2.7 Pass chloroform layer through anhydrous sodium sulphate.

A-2.8 Concentrate to 50 ml and spot on TLC plate.

A-3 CALCULATION

$$\text{Aflatoxin, mg/kg} = \frac{V \times s \times 1\,000}{v \times m}$$

where

V = volume of extract in ml,

v = volume of extract giving minimum observable fluorescence in µl,

m = mass of sample in g, and

s = standard toxin giving minimum observable fluorescence in µg.'

(FAD 44)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 4 MARCH 2002
TO
IS 75 : 1973 SPECIFICATION FOR LINSEED OIL, RAW AND REFINED

(Second Revision)

(*Amendment No.* 3, *page* 2, *clause* **4.5.2.1**) — Substitute '5 μ g/kg' *for* '5 mg/kg '.

(FAD 44)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR LINSEED OIL, RAW AND REFINED

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 17 August 1973, after the draft finalized by the Oils and Oilseeds Sectional Committee had been approved by the Chemical Division Council and the Agricultural and Food Products Division Council.

0.2 Linseed oil is used in the manufacture of varnishes, paints, putty, oil cloth, factice, linoleum, printing inks, artificial rubber, tracing cloth, and patent leather. It is applied to paper and fabrics to render them waterproof and tough. Certain grades of the oil are also used for edible and pharmaceutical purposes.

0.3 This standard was first published in 1950 and then revised in 1967 by amalgamating IS:76-1950*, IS:558-1954† and IS:3474-1966‡. In the second revision the limit for iodine value is being changed from 175 *Min* to 170 *Min* in view of the data available and the experience gained. This change brings this requirement in line with the provisions of the Prevention of Food Adulteration Act, 1952 of the Government of India.

0.4 The pharmaceutical grade of linseed oil is covered in Pharmacopoeia of India (The Indian Pharmacopoeia). The Raw Grade 2, specified in this standard, corresponds to this grade. The boiled and pale-boiled types of linseed oils are covered in IS:77-1968§.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960‖. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Specification for linseed oil, refined, for paints.
†Specification for linseed oil, pharmaceutical.
‡Specification for solvent-extracted linseed oil.
§Specification for linseed oil, boiled, for paints (*first revision*).
‖Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for linseed oil.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in **2** of IS:548-1964* and also those given below shall apply.

2.1.1 *Alkali-Refined or Semirefined Linseed Oil* — Linseed oil which has been refined by neutralization with alkali and bleached with bleaching earth or activated carbon or both, no other chemical agents being used. The oil may also be treated with mineral acid prior to alkali-refining.

2.1.2 *Acid-Refined Linseed Oil* — Linseed oil which has been refined using mineral acid and bleached with bleaching earth or activated carbon or both.

3. TYPES AND GRADES

3.1 The material shall be of two types, namely, expressed and solvent-extracted, with grades as given below:

a) *Expressed*:
   1) Alkali refined,
   2) Acid refined,
   3) Raw Grade 1, and
   4) Raw Grade 2.

b) *Solvent-Extracted*:
   1) Semirefined, and
   2) Raw.

3.1.1 Of these, alkali-refined grade and Raw Grade 1 of the expressed type are suitable for edible use.

NOTE — Although the alkali-refined and the semirefined grades are equivalent, the latter is not considered suitable for direct edible consumption.

4. REQUIREMENTS

4.1 Description — The material shall be obtained from good quality linseed cake by solvent-extraction, or from clean and sound linseeds from *Linum usitatissimum* Linn., fam. Linaceae, either by process of expression or solvent extraction.

4.1.1 Solvent-extracted linseed oil shall be produced by using solvent hexane conforming to IS:3470-1966†.

*Methods of sampling and test for oils and fats (*revised*).

†Specification for hexane, food grade.

4.2 The material shall be clear and free from rancidity, adulterants, sediment, suspended and other foreign matter, separated water and added colouring and flavouring substances.

4.2.1 The clarity of the material shall be judged by the absence of turbidity after keeping the filtered sample at 30°C for 24 hours.

4.3 Admixture with Other Oils—The material shall be free from admixture with other oils, when tested according to the methods prescribed in **20** of IS:548-1964*.

4.4 The material shall also comply with the requirements given in Table 1.

5. PACKING

5.1 The material shall be supplied in suitable well-closed containers, as agreed to between the purchaser and the supplier.

6. MARKING

6.1 The containers shall be marked with the following:

a) Name including the type and grade of material;
b) Mass of the material in the container;
c) Manufacturer's name and trade-mark, if any;
d) Batch number; and
e) Year of manufacture.

6.2 In the case of nonedible grades (*see* **3.1.1**), the containers shall also be suitably marked 'FOR INDUSTRIAL NONEDIBLE USES ONLY' (either printed on the label affixed to the container or lithographed or stencilled thereon with indelible ink) in a type size of not less than 50 mm.

7. SAMPLING

7.1 Representative samples of the material shall be drawn as prescribed in **3** of IS:548-1964*.

8. TEST METHODS

8.1 Tests shall be carried out as prescribed in the relevant clauses of the standards specified in col 9 of Table 1.

8.2 Quality of Reagents—Unless specified otherwise, pure chemicals and distilled water (*see* IS:1070-1960†) shall be used in tests.

NOTE—'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

9. CRITERIA FOR CONFORMITY

9.1 A lot shall be declared as conforming to this standard, if the test results of thec omposite test sample satisfy the requirements prescribed in **4**.

*Methods of sampling and test for oils and fats (*revised*).
†Specification for water, distilled quality (*revised*).

TABLE 1 REQUIREMENTS FOR LINSEED OIL

(*Clause* 4.4)

Sl No.	Characteristic	Requirement for						Methods of Test, Ref to Clause	
		Expressed		Solvent-Extracted					
		Alkali-Refined	*Acid-Refined*	*Raw, Grade 1*	*Raw, Grade 2*	*Semi-Refined*	*Raw*		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
i)	Moisture and insoluble impurities, percent by mass, *Max*	0·10	0·10	0·25	0·25	0·10	0·5	5 and 6	of IS : 548-1964*
ii)	Colour in a ¼-in cell on the Lovibond scale expressed as $Y + 10$ R, not deeper than	10	10	35	35	10	50	13	
iii)	Refractive index at 40°C	←——— 1·472 0 to 1·475 0 ——— →						10	
iv)	Relative density at 30°C/30°C	←——— 0·923 to 0·928 ——— →						11	
v)	Saponification value	←——— 188 to 195 ——— →						15	
vi)	Iodine value (Wijs), *Min*	←——— 170§ ——— →						14	
vii)	Acid value, *Max*	0·5	8·0	4·0	10·0	0·5	10·0	7	
viii)	Unsaponifiable matter, percent by mass, *Max*	1·5	1·5	1·5	1·5	1·5	2·0	8	
ix)	Foots, percent by volume, *Max*	—	—	1·0	—	—	—	20	of IS : 74-1966†
x)	Freedom from break	To pass the test			—	—	—	21	
xi)	Freedom from lead	To pass the test			—	—	—	22	
xii)	Flash point (Pensky-Martens), closed, °C, *Min*	—	—	—	—	—	125	IS : 1448 [P : 21]-1970‡	

*Methods of sampling and test for oils and fats (*revised*).

†Methods of sampling and test for drying oils for paints (*first revision*).

‡Methods of test for petroleum and its products: P : 21 Flash point (closed) by Pensky-Martens apparatus (*first revision*).

§The iodine value of the material for surface coating industry shall be minimum 125

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